

The Effect of Foot Reflexotherapy on Acute Low Back Pain: A Pilot Study

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ABSTRACT

Background: Foot reflexotherapy is a traditional complementary method applied in treatment of a lot of diseases and used to reduce pain in many health conditions. In the present study, the possible effects of foot reflexotherapy on acute low back pain usually secondary to intervertebral disc prolapse were investigated.

Methods: Fourteen patients with acute low back pain included the study. The Numeric Rating Scale (NRS) was used to get pain scores. Pain scores were obtained 10 minutes before and after foot reflexotherapy.

Results: The mean scores of acute low back pain in study group were 8.12 (SD=2.31) before and 4.34 (SD=1.92) after foot reflexotherapy. The decrease of pain scores between pre- and post-tests were statistically significant ($p < 0.01$).

Conclusion: The results of this study suggest that foot reflexotherapy has therapeutic potential to apply in patients with non-specific acute low back pain.

Key words: Foot reflexotherapy, Acute pain, Low back pain, Acute low back pain

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INTRODUCTION

The frequency of acute low back pain is increased in recent years because of sedentary life and long-term computer usage. Especially, non-specific low back pain became one of the most prevalent health problems in the world [1,2]. Over 80% of people experience LBP at least once in their lifetime [3,4]. Acute LBP is often defined as pain that persists for <12 weeks; it is regarded as nonspecific and therefore, cannot be attributed to a definite cause [5]. Although 95% of patients with acute LBP seem to recover within a few months after onset [6], it is essential for medical practitioners to prevent the development of chronic LBP.

Reflexotherapy is a traditional and complementary massage therapy in which the deep massage is applied by therapist's hands to specific areas representing various organs on the ears, hands, and feet [7]. These specific points or areas on ears, hands and feet are accepted as projections of the different organs or tissues of the body in reflexotherapy or reflexology. However, foot reflexotherapy is used the most widely [8]. It has been asserted that reflex arcs related to the different organ and tissues begin from specific small areas on the foot in foot reflexotherapy.

It has been indicated that foot reflexotherapy had an undeniable role in relieving pain, psychological stress and

fatigue in patients with various health problems [9-11] including rheumatoid arthritis [3], cancer [10,11] and some other disturbances [12]. It has been reported that foot reflexotherapy reduced the psychological stress, heart rate, respiratory rate, and arterial blood pressure in another study [13]. Also, reflexology therapy was reported to reduce pain in patients with low back pain [14]. Furthermore, a randomized controlled study by Siev-Ner et al. [15] reported that 11-week feet reflexotherapy and massage of the calf area in patients with multiple sclerosis led to improvement in intensity of paresthesias, urinary symptoms, and muscle strength. In a recent study, foot reflexotherapy was reported to have an important role in increase some EEG waves (beta and gamma) related to memory and attention functions of the brain [8]. Also, in a recent study, foot reflexotherapy was suggested to improve inattention, hyperactivity findings in a child with ADHD and also they reported that his enuresis nocturna disappeared completely after foot reflexotherapy of 8 weeks [16].

The action mechanisms of complementary methods including foot reflexotherapy are not exactly known now. But, many scientific studies claim that traditional complementary therapies such as foot reflexotherapy, wet cupping therapy and footbath therapy work for homeostasis, and regulate equilibrium state between sympathetic and parasympathetic autonomic nervous systems and in general increase the parasympathetic tone, while decreasing sympathetic tone [17-22].

The aim of this pilot study was to reinvestigate the possible role of the traditional foot reflexotherapy in relieving of the pain in patients with acute non-specific low back pain.

MATERIALS AND METHODS

Participants

The present study was designed to measure the changes in low back pain score before and after foot reflexotherapy. We recruited patients with acute low back pain through advertisements on notice board of a university hospital (Nizamiye Hospital) in Abuja. After a telephone interview, potential participants were invited to the Nile University of Nigeria, College of Health Sciences.

The experimental protocol was in accordance with international ethical standards. The study was carried out in accordance with the Helsinki Declaration (1975, revised in 1996-2013) and approved by the local ethics committee. The aims and objectives of the study were explicitly explained to the participants before commencement of the study. All participants voluntarily gave a written informed consent to participate in the study.

Patients with traumatic low back pain, inflammatory or malignant diseases, congenital malformation of the spine, radicular symptoms such as radiating pain, paresis, prickling, or tingling, invasive treatments within the last 4 weeks, who had surgery to the spine within the last year, and who were on corticosteroid, opioid or any other

similar treatments were excluded. Further exclusion criteria were pregnancy, serious acute or chronic organic diseases such as diabetes or cancer, mental disorders.

Data collection

The subjective data were collected by using a questionnaire, The Numeric Rating Scale (NRS) [23]. NRS is a simple method used for the assessment of variations in the subjective intensity of pain. In clinical practice, as a measure of the efficacy of the treatment, NRS segmented numeric version is often used in which patients select from 0 to 10 that reflects the intensity of their pain [24]. In the NRS, zero represents "no pain" and 10 represents "extreme pain". Participants stated their pain level on the scale. This ensured that statistical evaluation of the effects of the foot reflexotherapy was not influenced by alterations in medications or physiotherapy during the study.

Foot reflexotherapy

The thumbs and fingers of the working hand were used to apply appropriate pressure to related areas of the participant's feet that corresponds to especially the low back areas of lumbosacral columna vertebralis (Figure 1) [25]. These areas were the classic foot reflexotherapy zones chosen in all reflexotherapies. The foot reflexotherapy was applied to all patients by the author (Dane S) who is a senior medical doctor and has many studies about reflexotherapy and some other complementary medicine.

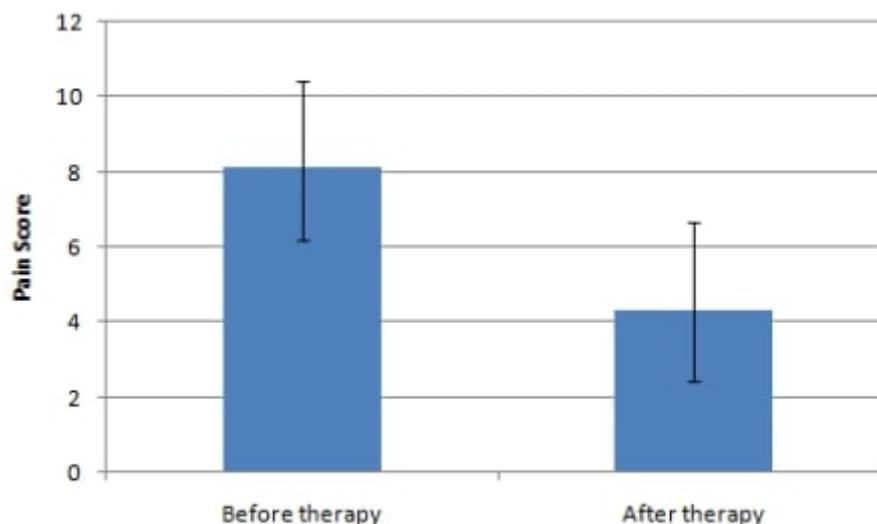


Figure 1: The foot reflexology application area of lumbo-sacral vertebrae on foot.

Statistical analysis

The data were analyzed using the Statistical Package for Social Sciences 16.0 (SPSS). Paired samples T-test was used for analysis.

RESULTS

Our participants were 14 volunteer patients with nonspecific acute low back pain, 4 females and 10 males; aged 40-60 years (mean age 48.13 ± 9.12 years). Their mean body mass index (BMI) was 32 (SD=6.51). The mean pain scores were 8.12 (SD=2.31) before and 4.34 (SD=1.92) after foot reflexotherapy (see Table 1 and

Figure 2). The decrease of pain scores after foot reflexotherapy was statistically significant ($p < 0.01$).

Table 1: The mean pain scores (\pm SD) before and after foot reflexotherapy.

Pain score	Before	After	t	p
	8.12 \pm 2.31	4.34 \pm 1.92	3.24	<0.01



Figure 2: The mean pain scores before and after foot reflexotherapy.

DISCUSSION AND CONCLUSION

Low back pain is a very frequent public health problem in the world and a major cause of disability that affects work performances and well-being. Low back pain can be acute, subacute or chronic. There are some several well known risk factors for acute nonspecific low back pain such as occupational posture, depressive moods, obesity, body height or age.

In the present study, the decrease in pain scores (from 8.12 to 4.34) secondary to foot reflexotherapy was huge and imposing. It can be stated that foot reflexotherapy must be accepted as a complementary therapy in clinical practice for patients with acute low back pain. These results supported a previous study related the effects of reflexotherapy on low back pain [13].

Low back pain is one of the most common reasons people go to the doctor or miss work, and it is a leading cause of disability worldwide. Most people have back pain at least once in their life. As most cases of acute low back pain have a favorable prognosis, current guidelines on imaging studies recommend conservative treatment for 6 weeks [26]. A recent randomized study and systematic review suggested that cupping, another complementary and traditional therapy method, alleviates lower back pain [27,28].

However the mechanism of action of foot reflexotherapy is still not clear, but there are some different theories about physiological and regulating effects. Reflexotherapy has been used to alleviate symptoms in several human diseases. Reflexotherapy have beneficial effects to decrease pain, psychological stress [17] and symptoms of fatigue [9]. It is speculated that the mechanisms by which foot reflexotherapy affect body functions are due to the mediation of balance between sympathetic and parasympathetic divisions of the autonomic nervous system, and also, stimulation of the release of mediators that act on local and distant sites to regulate physiological processes [17-22].

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